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Abstracts
Oral Presentations (OP)

OP-17

Chemical properties of locally composts produced in Saudi Arabia and the need for regulations

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Most of the soils in Saudi Arabia, located in aired and semiarid region of Asia, it has a very low amount of organic matter. To improve the organic matter in these soils, organic fertilizers are used, which ameliorate the chemical, physical and microbiological characteristics of these soils. Application of compost, as a rich source of organic nutrition, is favorable. With regard to the importance of this issue; our research was aimed to evaluate the quality and stability of compost locally produced in Saudi Arabia, in the term of chemical characteristics included electrical conductivity (EC), pH, C/N ratio, nitrate and ammonium concentrations, organic matter (OM) and heavy metals levels. The results showed variation in the chemical characteristics of all types of compost under study. Final EC values ranged from 0.6 dSm^{-1} to 25.4 dSm^{-1} and about 93 % exceeded the upper limit set by CCQC and PAS-100. Most pH values were above 7. Ammonium contents were between 178 $mgkg^{-1}$ and 2650 $mgkg^{-1}$ in the final product with 44.4 % above the recommended level, while nitrate contents were between 69.7 $mgkg^{-1}$ and 1157.8 $mgkg^{-1}$ with 22.2 % above the recommended. Concentrations of Zn, Cu, Co, and Pb were in the accepted range. However, Cd and Ni concentrations were exceeded the suggested limit in about 42.8 % and 33.3 %, respectively.

OP-18

Microbial quality of commercial biofertilizers to increase nutrient use efficiency and crop Productivity

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Commercial agricultural inoculants are increasingly being produced and sold in the market worldwide, and are claimed to have a major impact on increasing crop productivity. The main

objective of this research was to characterize and assess the microbial content of biofertilizers obtained from different countries in order to verify whether they fulfill the claims of the manufacturers. The proliferation of the underperforming inoculants can thereafter be prevented, and value can be added to effective products. The microorganisms contained in the commercial inoculants were isolated, purified, and identified by partial sequencing of the 16S rDNA. Results showed that the majority (about 64%) of the products contained one or several strains of contaminants and only 37% of the products could be considered as pure. Forty percent of the tested products did not contain any of the claimed strains but only contaminants and several potential human pathogens were found. Rhizobial products were generally of better quality than the other PGPR-based products. Results highlight the need for better quality control systems to ensure efficacious products reach the end users.

OP-19

Diverse role of biocontrol technology in crop protection

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Biocontrol technology is the use of living systems and organisms to develop useful products, or "any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific use.It is an emerging field with a strong foundation in ecosystem development by nature friendly methods for source tracking of environmental pollutants and treatment processes for contaminated soil, water, air, pathogens. The microbial inoculants based applications are involved in IPM processes which play significant role in supporting the damaged ecosystems and play an immense role in the development of critical treatment processes for crop improvement and sustainable agriculture and life forms converting a biological response into a processed signal. This technology is not only the application of biological control agents in the field but also encompasses many other aspects of host, pathogen and biocontrol agents.Integrated Pest Management includes precise studies on disease development host, pathogen and environment interaction. There is an acute necessity to develop and produce smart and innovative biosensor devices for monitoring and plant disease diagnosis and impact regulation of various geological processes and biological processes like unforeseen changes of climate, and fast spreading of fungal, viral and bacterial diseases of agricultural and forest plants. A range of molecules with bio recognition powers are available naturally such as toxins and enzymes released in this process. Another field of application can be used as the sensing receptors in biosensors in the use of microbial inoculants for disease management. The demand for rapid and accurate diagnosis of plant diseases has risen in the last decade. Physical features like Soil pH, calcium level, nitrogen form, and the availability of nutrients play major roles in disease management. Perhaps, early diagnosis of fungal disease, in addition to an accurate classification of the pathogenic fungal type during post-harvest storage is another field which is very work to be achieved through biosensors.A biosensor is an analytical device, used for the detection of ananalyte, but combines a biological component with a physicochemical detector or transducing microsystems and is a powerful alternative to conventional techniques. Fast and accurate sensing technology is the need now-a-days in monitoring different agricultural areas specifically its emerging role in crop protection, detection and identification of diseases.